



**CONESTOGA-ROVERS  
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October 19, 2012

Reference No. 056394-06

Ms. Sheila Desai  
Remedial Project Manager  
United States Environmental Protection Agency – Region 5  
77 West Jackson Boulevard (SR – 6J)  
Chicago, Illinois 60604 – 3590

Dear Ms. Desai:

Re: Responses to U.S. EPA Comments  
Remedial Investigation Report, Revision 1  
Former Plainwell, Inc. Mill Property Operable Unit No. 7  
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site  
Allegan and Kalamazoo County

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Conestoga-Rovers & Associates (CRA) has prepared this letter, on behalf of the Weyerhaeuser Company (Weyerhaeuser), in response to the August 30, 2012 United States Environmental Protection Agency's (U.S. EPA's) comments on the Remedial Investigation (RI) Report, Revision 1 for the former Plainwell, Inc. Mill Property (Site).

On April 20, 2012, Weyerhaeuser submitted a revised RI Report in response to U.S. EPA comments on the RI Report, dated February 17, 2012 and U.S. EPA's November 23, 2011 comments associated with the Human Health Risk Assessment (HHRA) and Screening Level Ecological Assessment (SLERA) portions of the RI and on a subsequent memorandum, entitled *Proposed Modifications to Human Health and Ecological Risk Assessments, Remedial Investigation Report, Former Plainwell, Inc. Mill Property, Plainwell, Michigan*, which was submitted to U.S. EPA on November 9, 2011. Subsequently, an error was discovered associated with the Human Health Risk Assessment (HHRA) portion of the report and a subsequent revised RI Report was submitted on July 10, 2012. The revised RI Report was submitted in accordance with the RI/Feasibility Study (FS) Work Plan dated July 2009, the Multi-Area Quality Assurance Project Plan (QAPP) dated September 23, 2009, the Multi-Area Field Sampling Plan (FSP) dated November 2009, the Phase II RI Work Plan dated November 2009, the Statement of Work (SOW) for the RI/FS, and the terms of the Consent Decree for the Design and Implementation of Certain Response Actions at Operable Unit #4 and the Plainwell, Inc Mill Property of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (Consent Decree), which became effective February 22, 2005.

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The following presents responses to the U.S. EPA's comments consistent with the revisions to the RI Report dated July 10, 2012.

### **U.S. EPA Comment #1**

*Because detected chemicals are not being screened or excluded from the list of contaminants of potential concern based on comparison to background levels, the response to general comment 2 is acceptable with the following qualification. The overall approach is acceptable, but the burden is on CRA and Weyerhaeuser to adequately justify the level they choose (e.g., 17 or 18 mg/kg for arsenic in soil). Therefore, EPA does not agree to any particular site-specific allowable concentrations nor does EPA agree with any specific types of general response action (such as institutional controls) at this time. Although the overall approach is acceptable, CRA and Weyerhaeuser need to provide adequate justification and explanation for any levels chosen. Further, the types of response actions taken and alternatives developed for the site must be adequately supported in the feasibility study.*

### **Response**

The comment is acknowledged. Further evaluation of the types of remedial alternatives will be conducted during the development and screening of evaluations and feasibility study, and a final remedy and Applicable or Relevant and Appropriate Requirements (ARARs) will be established as part of the final remedy selection process. CRA and Weyerhaeuser will provide adequate justification and explanation for any levels selected as part of this process.

### **U.S. EPA Comment #2**

*The responses to general comment 4 and specific comments 5, 7, 8, and 12 state that the requested information will be provided in Appendix E. This means that Appendix E will contain (1) Fannie Pell Bridge information, (2) historical site drawings, (3) the previous ecological risk assessment prepared for the river, and (4) the September 9, 2010 memo with a description of modifications to the proposed soil boring locations. This approach is acceptable pending review of information to be included in the revised report. See Specific Comment 8 in Enclosure 1 for more details.*

### **Response**

The Summary of Soil and Groundwater Investigation, Fannie Pell Park Western Bridge Footing, Former Plainwell, Inc. Mill Property, Plainwell, Michigan prepared by CRA and dated February 24, 2011, historical Site drawings illustrating the locations of water supply wells and building numbers, Final (Revised) Baseline Ecological Risk Assessment, Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site prepared by Camp Dresser & McKee, Inc. (CDM) and dated April 2003, and



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*Summary of Modifications to Proposed Soil Boring Locations, Supplemental Phase II Remedial Investigation Activities, Former Plainwell, Inc. Mill Property, Plainwell, Michigan* prepared by CRA and dated September 9, 2010 are included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.

The references to U.S. EPA Specific Comments No. 7 and 8 were incorrectly attributed to the Ecological Risk Assessment. The correct reference should be to the *Emergency Response Plan Documentation Report, Former Plainwell Paper Mill, Plainwell, Michigan* prepared by RMT, Inc. and dated January 2009. This document is also included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.

## **ENCLOSURE 1 - EPA COMMENTS ON RI REPORT, REVISION 1**

### **U.S. EPA RI General Comment #1**

*After the RI field activities were completed, the Michigan Department of Transportation (MDOT) installed two sewer lines through portions of the site. The RI report must be revised to discuss any impacts the MDOT sewer project might have with respect to conclusions pertaining to the RI. For example, the report should include an evaluation of the final Prince Street and Church Street sewer alignments and discuss whether contamination present at depth possibly was disturbed and brought to the surface, which could have changed site conditions. Moreover, MDOT drainage outlet details indicate that the planned sewer pipe floor elevations for the Prince Street and Church Street sewers ranged from about 715 to 712 feet above mean sea level (msl). Groundwater elevation maps presented in the RI report indicate that groundwater elevations measured in January and February 2010 ranged from about 711 to 709 feet above msl near the Prince Street sewer, and about 712.4 to 712.2 feet above msl near the Church Street sewer. The Revised RI report (and subsequent Revised RI report addendum to be submitted upon completion of additional activities) should include an evaluation of possible impacts of the new sewer lines on groundwater flow.*

### **Response**

Section 5.2.4 in the October 19, 2012 Revised (Revision 2) RI Report includes a discussion regarding the Michigan Department of Transportation (MDOT) and Michigan Gas Utilities (MGU) utility line installations completed in 2012. Additionally, the *Michigan Gas Utilities and Michigan Department of Transportation Utility Lines, Former Plainwell, Inc. Mill Property, Plainwell, Michigan* memorandum prepared by CRA and dated June 27, 2012 is included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.



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### **U.S. EPA RI General Comment #2**

*During the MDOT sewer installation project, paper residual seams were observed in the subsurface in the area of the former wastewater treatment lagoons. The RI report should be revised to discuss how depth and extent of these observed paper residuals relate to the current understanding discussed in the RI report.*

### **Response**

Section 5.2.4 in the October 19, 2012 Revised (Revision 2) RI Report includes a discussion regarding the Michigan Department of Transportation (MDOT) and Michigan Gas Utilities (MGU) utility line installations completed in 2012. Additionally, the *Michigan Gas Utilities and Michigan Department of Transportation Utility Lines, Former Plainwell, Inc. Mill Property, Plainwell, Michigan* memorandum prepared by CRA and dated June 27, 2012 is included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.

### **U.S. EPA RI General Comment #3**

*The draft RI report divided the site into investigation areas 1, 2, 3, 3A, 3B, 3C, 3D, and 3E. The revised RI report (and risk assessments) refers to 11 new redevelopment areas. For additional clarity, previously designated investigation areas (Areas 1, 2, 3, 3A, 3B, 3C, 3D, and 3E) should be superimposed over the 11 new redevelopment areas on Figure 1.2, because the relationship between the designations is discussed in the revised RI report.*

### **Response**

Figure 1.2 in the October 19, 2012 Revised (Revision 2) RI Report includes the boundaries of historical operational areas 1, 2 and 3 superimposed over the 11 redevelopment areas.

### **U.S. EPA RI General Comment #4**

*The risk assessment conclusions in the executive summary are organized by exposure area. The conclusions are presented as lengthy narrative summaries; some summaries take up between 0.5 and 1.5 pages. This type of presentation makes it difficult for the reader to follow along and to distinguish details. An alternate type of presentation—such as an introductory or summary portion of text, followed by a series of bullets (and, as necessary, sub-bullets)—would ease the reader's task in these regards. The risk assessment conclusions in the executive summary should be revised accordingly.*



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### **Response**

The Executive Summary has been modified in the October 19, 2012 Revised (Revision 2) RI Report to summarize the findings of the RI in a more succinct manner.

### **U.S. EPA RI Specific Comment #1**

*Executive Summary, Page vii, Paragraph 1. The text discusses groundwater in the downgradient direction of the coal tunnel at well MW-2. As acknowledged in the work plan for additional RI activities that CRA will conduct for Weyerhaeuser, MW-2 is not located downgradient of the coal tunnel; therefore, a new well, MW-22, has been proposed. The text should be revised to acknowledge that MW-2 is not downgradient of the coal tunnel.*

### **Response**

The text in the Executive Summary has been revised to acknowledge that MW-2 is not directly downgradient of the coal tunnel, based on groundwater flow direction data collected.

### **U.S. EPA RI Specific Comment #2**

*Section 5.2.1.3.2.2, Page 54, Paragraph 2. The text should be revised to state that MW-2 is not downgradient of the coal tunnel (see specific comment 1).*

### **Response**

The text in Section 5.2.1.3.2.2 has been revised to indicate that MW-2 is not directly downgradient of the coal tunnel, based on groundwater flow direction data collected.

### **U.S. EPA RI Specific Comment #3**

*Section 5.2.2.2.1, Page 58, Paragraph 3. Figure 1.2 shows that investigation Area 1 contains "new" Commercial Area 1 (wooded lot); however, Commercial Area 1 is not included in the title of this section or the description provided in the text. The text should be revised to state that Area 1 includes redevelopment areas Residential Areas 1 through 3, Commercial Area 1, and Waterfront Plaza. In addition, for further clarity, the text in this section and all subsequent sections describing the relationship between the original investigation areas and the new redevelopment areas should be revised to indicate whether the original investigation areas contain all or portions of the new redevelopment areas.*



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### **Response**

The October 19, 2012 Revised (Revision 2) RI Report has been modified accordingly to further correlate the relationship between the former historical operational areas and the redevelopment areas.

### **U.S. EPA RI Specific Comment #4**

*Section 5.2.2.2.6, Page 65, Paragraph 1. The title of this section (and the description provided in the text) should be revised to state that original investigation Area 3C also includes part of Waterfront Plaza.*

### **Response**

The title of Section 5.2.2.2.6 has been revised in the October 19, 2012 Revised (Revision 2) RI Report to indicate that historical operational Area 3C includes a portion of the Waterfront Plaza.

### **U.S. EPA RI Specific Comment #5**

*Section 5.3.2 Pages 147 and 148. The heading for the second column in the table should be revised to "sample date" rather than "sample depth."*

### **Response**

The heading for the second column in the table has been revised in the October 19, 2012 Revised (Revision 2) RI Report as "Sample Date" instead of "Sample Depth."

### **U.S. EPA RI Specific Comment #6**

*Section 10.1.1.8, Page 337, Paragraph 3. The text should be revised to state that MW-2 is not downgradient of the coal tunnel (see specific comment no. 1).*

### **Response**

The text in Section 10.1.1.8 has been revised to indicate that MW-2 is not directly downgradient of the coal tunnel, based on groundwater flow direction data collected.





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### **U.S. EPA RI Specific Comment #7**

*Figure 5.5 and Plans 16 through 19. Figure 5.5 shows RI sampling locations in the Waterfront Plaza redevelopment area. Plans 16 through 19 presented in Volume III show RI soil sample results for the same area. The text should be revised to discuss the lack of sampling points in this area, and whether additional sampling is needed to adequately characterize it. This comment also pertains to the limited groundwater data points available for Mixed Residential/Commercial Area 1.*

### **Response**

Sample locations selected during the development of the scope of work for the RI presented in the multi-volume work plan prepared for the Site and approved by U.S. EPA, were based on a biased sampling approach. The biased sampling approach was based on the review of available historical information relating to operations conducted at the Site that may have resulted in impacts to the Site and which could pose unacceptable risk to human health or the environment. This created a sampling bias toward worst-case (higher) exposure point concentrations in the media sampled. The utilization of such biased data increases the conservative or health-protective nature of the health risk and hazard assessment. The media samples were collected from areas of known contamination, and should represent the highest concentrations. Sampling rounds usually focused on additional characterization and delineation of the more heavily contaminated areas, thus introducing a high bias. Therefore, these methods were utilized as a conservative measure of exposure and will likely overestimate actual exposure and risks and hazards.

These areas of high contamination have no relationship with the various development areas that were identified based on the conceptual redevelopment plan. Therefore, it is conceivable that certain development areas may have larger data sets compared to others.

From a HHRA perspective, all development areas of the Site had a sufficient number of soil samples (minimum sample size between 8 and 10 soil samples as identified by U.S. EPA, 2010), with the exception of Waterfront Plaza and Commercial Area 3. Based on the conceptual redevelopment plan, there was only one soil data point available for the Waterfront Plaza. Therefore, 5 surface soil samples and 12 surface and subsurface soil samples collected adjacent to Waterfront Plaza and within Residential Areas 3 and 4 were combined to form the Waterfront Plaza soil dataset to permit evaluation of soil exposure within this development area. Based on the conceptual redevelopment plan, there were 6 surface soil samples and 15 surface and subsurface soil samples available for Commercial Area 3. The number of surface soil samples for both Waterfront Plaza and Commercial Area 3 are less than the U.S. EPA (2010) recommended minimum sample size of 8 to 10 samples; however, given that the potentially contaminating activities within these development areas were very limited, and that the HHRA also included evaluation of all receptors to the combined surface and subsurface soils, which has a sufficient



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sample size, it is expected that the low sample size for surface soil at Waterfront Plaza and Commercial Area 3 would not be identified as a significant uncertainty in the datasets for these areas.

For groundwater, many of the development areas had sample sizes less than the U.S. EPA (2010) recommended minimum sample size of 8 to 10 samples. Therefore, to supplement relative small sample sizes in the development areas, the groundwater data for the Site was separated into three areas (Area 1, Area 2, and Area 3) consistent with the separation of the Site during the Site characterization and that followed by the HHRA in the previous submission (see Figure 1.2 of the RI report). To determine which Area (Area 1, Area 2, or Area 3) each development area occurs, the conceptual redevelopment plan presented on Figure 8.1 of the RI report was overlaid on Figure 1.2 of the RI report (some overlap occurred). For example, Residential Area 4 on Figure 8.1 of the RI Report is located within Area 1 on Figure 1.2 of the RI report. Therefore, the groundwater dataset for Residential Area 4 would be the Area 1 groundwater dataset. The following bullets summarize the distribution of the groundwater datasets:

- Area 1 groundwater data was applied in Residential Areas 1, 2, and 3, and Commercial Area 1
- Area 2 groundwater data was applied in Commercial Area 4 and Mixed Residential/Commercial Area 2
- Area 3 groundwater data was applied in Commercial Areas 2 and 3, Mixed Residential/Commercial Area 1, Residential Area 4, and Waterfront Plaza

The text in Section 8.1.6.1 of the October 18, 2012 Revised (Revision 2) RI Report has been modified to include the above information.

#### **U.S. EPA RI Specific Comment #8**

*Appendix E. The responses to EPA comments (issued to Weyerhaeuser and CRA on February 17, 2012) in a letter prepared by CRA dated April 20, 2012, state that additional information now appears in Appendix E to the revised RI report. Specifically, response to EPA General Comment No. 4 states that a copy of the "Summary of Soil and Groundwater Investigation Activities, Fannie Pell Park Western Bridge Footing, Former Plainwell, Inc. Mill Property, Plainwell Michigan" memorandum is provided in Appendix E. The above-referenced memorandum is not included in Appendix E; therefore, Appendix E should be revised to include this information. Additionally, responses to EPA Specific Comments No. 7 and 8 state that ecological risk assessment information is now provided in Appendix E to the revised RI report. This information is not included in Appendix E; therefore, Appendix E should be revised to include the above-referenced information, or the CRA responses to EPA comments should be revised to*





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*cite the correct location of this information if it appears in a different appendix. (Appendix E was absent in the RI Report dated July 10, 2012.)*

**Response**

The *Summary of Soil and Groundwater Investigation, Fannie Pell Park Western Bridge Footing, Former Plainwell, Inc. Mill Property, Plainwell, Michigan* prepared by CRA and dated February 24, 2011, historical Site drawings illustrating the locations of water supply wells and building numbers, *Final (Revised) Baseline Ecological Risk Assessment, Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site* prepared by Camp Dresser & McKee, Inc. (CDM) and dated April 2003, and *Summary of Modifications to Proposed Soil Boring Locations, Supplemental Phase II Remedial Investigation Activities, Former Plainwell, Inc. Mill Property, Plainwell, Michigan* prepared by CRA and dated September 9, 2010 are included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.

The references to U.S. EPA Specific Comments No. 7 and 8 were incorrectly attributed to the Ecological Risk Assessment. The correct reference should be to the *Emergency Response Plan Documentation Report, Former Plainwell Paper Mill, Plainwell, Michigan* prepared by RMT, Inc. and dated January 2009. This document is also included in Appendix E to the October 19, 2012 Revised (Revision 2) RI Report.

Appendix E was not included in the July 10, 2012 RI Report, as only changes to the text of the report and modifications to the HHRA information presented in Appendix I were submitted to U.S. EPA at that time.

**ENCLOSURE 2 - EPA COMMENTS ON THE REVISED BASELINE HUMAN HEALTH RISK ASSESSMENT**

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**U.S. EPA HHRA General Comment #1**

*The executive summary and Section 10.1.3 (a summary of the HHRA) should be revised as necessary to reflect any changes made to Section 8.0 (and related appendices, tables, and figures) in response to general and specific comments.*

**Response**

The Executive Summary and Section 10.1.3 have been revised to reflect the changes made in response to U.S. EPA comments.



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### **U.S. EPA HHRA General Comment #2**

*Based on professional judgment, the HHRA assumes an exposure frequency for direct contact soil and groundwater exposure pathways for the utility worker of 2 days/year under reasonable maximum exposure (RME) conditions, and 1 day/year under central tendency exposure (CT) conditions. Much of the site is expected to be developed for multi-story, multi-occupant residential and/or commercial use. Such tenant spaces would be reasonably expected to need utility work (including installation, maintenance, and repair) more often than 1 or 2 days/year. For this very reason, owners of these spaces often employ building managers to help facilitate and coordinate utility and other work in these spaces. Within this context, the exposure frequency for the utility worker must be increased to more reasonably reflect likely job descriptions at these types of spaces. It is suggested that CRA increase the exposure frequencies by an order of magnitude to 20 days/year and 10 days/year under RME and CT conditions, respectively. The revised exposure frequencies should be supported by a clear justification.*

### **Response**

The comment is acknowledged. The exposure frequency for the utility worker has been changed to 20 days per year (days/year) and 10 days/year for RME and CT scenarios, respectively.

### **U.S. EPA HHRA General Comment #3**

*Section 8.1.5.6 states that appendix tables are designed to present chemicals that contribute 95 percent of the overall cumulative risks and hazards. This approach is fine as far as it goes. However, Section 8.1.5.6 also states that "in the summary tables presented below only the chemicals with hazard quotients of 1 or greater are shown as contributing COPCs." Numerous examples of hazards less than 1 are in the summary tables. For example, a chemical may be identified as a contributing chemical of potential concern (COPC) based on risk. For these chemicals, it is appropriate to show the associated hazard for completeness in the in-text tables. However, these COPCs should not be discussed in the text as contributors to hazard; inclusion of these COPCs in the text discussion clutters the discussion and is not helpful. In other cases, chemicals with no risks or risks  $< 1E-06$  and hazards  $< 1$  are shown as contributing COPCs. For example, see the future resident - "Undisturbed" surface soil exposure scenario on page 264 - aluminum has no risk and a hazard of 0.88 for groundwater. Several other COPCs have hazards well above 1; aluminum is clearly a minor contributor to total groundwater hazards and should not be listed in the in-text table or discussed in the text. The HHRA (Section 8.0) must be closely reviewed and revised to eliminate presentation and especially discussion of COPCs that are included only to reach the 95 percent criteria. The text (including the in-text tables) should focus on the drivers of risk ( $\geq 1E-06$ ) and hazard (hazards  $> 1$  or COPCs contributing to a segregated hazard  $> 1$  in instances where no COPCs with hazards  $> 1$  were identified).*



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### **Response**

Section 8.1.5.6 of the HHRA has been revised to focus only on the drivers of risk ( $\geq 10^{-6}$ ) and hazard ( $>1$ ).

### **U.S. EPA HHRA General Comment #4**

*Appendix I presents Risk Assessment Guidance for Superfund (RAGS) D-style tables presenting receptor-specific exposure, risk, and hazard results. Segregated hazards are presented at the bottom of each table. These tables are not explained or discussed in the text of Section 8.0. The segregated hazard results also do not include hazards not associated with a particular target organ. This means that some significant hazards (for example, those associated with iron) go unreported as part of the segregated hazards. EPA's RAGS recommends that discussion of segregated hazards is particularly important in cases where the cumulative hazard exceeds 1, but no individual COPC is associated with a hazard  $> 1$  (EPA 1989).*

*Section 8.0 must be revised to explain and document the segregated hazard calculation process and discuss segregated hazards as appropriate. The discussion of segregated hazards should be coordinated with revisions made in response to General Comment 4 to focus the text and in-text tables on the drivers of risk ( $\geq 1E-06$ ) and hazard (hazards  $>1$ ).*

### **Response**

Section 8.1.5.4 of the HHRA has been revised to discuss the segregated hazard calculation process, and to summarize the segregated hazards as appropriate within each development area for those receptors with a cumulative Hazard Index (HI) above 1.

Section 8.1.5.4 of the HHRA has also been revised to indicate that for those Chemicals of Potential Concern (COPCs) where toxicity endpoints affecting a specific target organ were not available the hazards for these COPCs were summed based on the assumption that they exert the same toxicological effect. This is considered to be a conservative approach.

### **U.S. EPA HHRA General Comment #5**

*The in-text tables and related text focus on COPCs contributing risks  $> 1E-06$ . However, as  $1E-06$  is the low end of EPA's risk range, it is important to identify and discuss any COPCs associated with risks equal to  $1E-06$ . Therefore, Section 8.0 should be revised to identify and discuss COPCs contributing risks  $\geq 1E-06$ .*



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### **Response**

Section 8.0 has been revised to identify and discuss those COPCs with risks  $\geq 10^{-6}$ .

### **U.S. EPA HHRA General Comment #6**

*Figure 5.5 shows Remedial Investigation (RI) sampling locations in the Waterfront Plaza redevelopment area. Plans 16 through 19 show RI soil sample results for the same area. The HHRA text (in particular, Section 8.1.6 [Uncertainty Analysis]) should be revised to discuss the lack of sampling points in this particular area and whether additional sampling is needed to adequately characterize it. This comment also pertains to the limited groundwater data points available for Mixed Residential/Commercial Area 1.*

### **Response**

See the response to U.S. EPA RI Specific Comment #7.

### **U.S. EPA HHRA General Comment #7**

*Minor editorial errors were identified. A necessary conversion factor is incorrectly presented as milligrams per kilogram (mg/kg); the conversion factor should be presented as kg/mg (see pages 208, 210, and 213, as examples). Section 8.0 should be closely reviewed to identify any editorial errors. These editorial errors should be corrected.*

### **Response**

The noted conversion factors were corrected. Section 8.0 was reviewed to ensure other editorial errors were corrected.

### **U.S. EPA HHRA Specific Comment #1**

*Executive Summary, Page viii, Paragraph 3. This section of the executive summary presents receptor-specific risks at Residential Area 2. The third sentence states that the calculated cancer risk for the resident exceeds  $1E-04$  for indoor air inhalation (from soil). However, the risk driver for this exposure pathway is not identified. The preceding discussion could imply to the reader that this indoor air risk is posed by arsenic. This interpretation would be incorrect. The indoor air risk to the resident receptor through inhalation of indoor air is driven by potential exposure to benzene. The executive summary should be revised to clarify this point.*



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### **Response**

The Executive Summary, Residential Area 2 has been revised to indicate that benzene was the contributor to the cumulative cancer risk for indoor air inhalation (from soil).

### **U.S. EPA HHRA Specific Comment #2**

*Section 8.1.3.3.2, Page 212, Paragraph 1. Section 8.1.3.3.2 presents the exposure scenario assumptions for the various receptors considered in the HHRA. Several errors were identified in the in-text table. First, for exposure duration, the CT and RME values are labeled incorrectly – they are reversed. Second, the non-carcinogenic averaging time is incorrectly reported as 365 days. According to EPA guidance, non-carcinogenic averaging time is calculated as the exposure duration (ED) (years) x 365 days/year (EPA 1989). Therefore, the in-text table should be revised to present the non-carcinogenic averaging time as 9,125 days (25 years x 365 days/year) and 3,285 days (9 years x 365 days/year) under RME and CT conditions, respectively.*

### **Response**

The exposure duration and averaging time presented in the in-text table summarizing the exposure assumptions for the utility worker in Section 8.1.3.3.2 has been revised.

### **U.S. EPA HHRA Specific Comment #3**

*Section 8.1.3.4.1, Page 218, Paragraph 1. Section 8.1.3.4.1 discusses the evaluation of non-residential adult exposures to lead in soil and water. The first sentence states "as the average exposure frequency for the trespasser and recreational user are only 25 days/year and 35 days/year, respectively, the lead exposure for the trespasser and recreational user was considered to be low and not of concern, and therefore, lead exposure was not evaluated further for a trespasser and recreational user." While EPA guidance recommends evaluating potential lead exposures using the average medium-specific lead concentrations, exposure frequency should be considered at RME levels (EPA 2009). For the trespasser and recreational user, the RME exposure frequency should be presented as 50.6 and 70 days/year, respectively.*

*The subjective determination that lead exposures for the trespasser and recreational user were low and therefore not further evaluated is not adequately supported and requires further explanation. Part of the required additional explanation may be found in the second sentence in the subject paragraph, which states that resident exposure is considered protective of the trespasser and recreational user exposure. While residential exposure is not evaluated for all exposure areas (for example, the Waterfront Plaza), a residential-based lead soil screening level could be used as a conservative surrogate for receptor-specific lead soil screening levels for trespasser and*



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*recreational receptors. If the average concentration of lead in soil at each exposure area is less than the residential-based lead soil screening level, lead can be reasonably assumed to pose no significant risk to trespasser and recreational user receptors.*

#### **Response**

The exposure frequencies indicated in Section 8.1.3.4.1, Paragraph 1 for the trespasser and recreational user were revised to 50.6 days and 70 days, respectively.

Based on the conceptual redevelopment plan, Residential Areas 1 through 4, and Mixed Residential/ Commercial Areas 1 and 2 included an evaluation of lead exposure to residential receptors, which are considered to be sufficiently protective of potential trespassers and recreational users within these areas.

Based on the conceptual redevelopment plan, Commercial Areas 1 through 4 and Waterfront Plaza included an evaluation of lead exposure to commercial worker receptors, which have an exposure frequency (250 days per year) that is significantly greater than the exposure frequencies of the trespasser and recreational user. Therefore, the evaluation of lead exposure to commercial workers is considered to be sufficiently protective of the trespasser and recreational user. Section 8.1.3.4.1, Paragraph 1 has been revised to include this information.

#### **U.S. EPA HHRA Specific Comment #4**

*Section 8.1.3.4.1.2, Page 221, Paragraph 0. Section 8.1.3.4.1.2 presents the adult lead exposure equation parameters considered in the HHRA. The text states that an averaging time of 168 days/year was used for both construction and utility workers. This value is appropriate for the construction worker based on the explanation provided in the text. However, utility work can reasonably be expected to occur throughout the year (e.g., frozen pipes, cable installation during the winter, etc.). Therefore, the averaging time for the utility worker should be revised to 365 days/year, or additional explanation should be provided to justify the current value.*

#### **Response**

The averaging time for the utility worker has been changed to 365 days, as indicated in Section 8.1.3.4.1.2 of the HHRA.





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**U.S. EPA HHRA Specific Comment #5**

*Section 8.1.3.4.2, Page 222, Paragraph 2. The text discusses the use of average lead concentrations at particular exposure areas. What is left unexplained is why some exposure areas (for example, the Waterfront Plaza) were not considered (lead was not a COPC at the Waterfront Plaza). Section 8.1.3.4.2 should be revised to clearly explain why potential lead exposure was not evaluated for all exposure areas.*

**Response**

Section 8.1.3.4.2 has been revised to indicate that lead was not identified as a soil/groundwater COPC for Mixed Residential/Commercial Area 1 and, therefore, residential lead exposure was not evaluated or required for this area of the Site. In addition, Section 8.1.3.4.2 has been revised to indicate that since residents are not expected to be at all other areas of the Site (i.e., Commercial Areas 1 through 4 and Waterfront Plaza), residential lead exposure was not evaluated or required for these areas.

**U.S. EPA HHRA Specific Comment #6**

*Section 8.1.3.4.2, Page 222, Paragraph 1. The in-text table provides only a single soil result for each exposure area. However, under future land use conditions, redevelopment may occur as slab-on-grade or with basements. Therefore, Section 8.1.3.4.2 (and related calculations) should be revised to present the lead concentrations in surface soil and the total soil column (0 to 10 feet below ground surface [bgs]) used in the respective undisturbed and disturbed scenarios (see Section 8.1.5.7.1).*

**Response**

The in-text table presented in Section 8.1.3.4.2 of the HHRA has been revised to include the undisturbed (surface soil lead) and disturbed (surface and subsurface soil lead) scenarios. The Integrated Exposure Uptake Biokinetic Model for Lead (IEUBK) output sheets from this analysis are presented in Appendix I-13.

**U.S. EPA HHRA Specific Comment #7**

*Section 8.1.5.3, Page 234, Paragraph 1. Section 8.1.5.3 presents the risk quantification summary. The in-text table for Residential Area 3 was found to contain an error. For potential exposure to surface soil for the resident (future) under RME conditions, the hazard index (HI) (7.3E-01) is less than 1; the notation in the column "HI>1" should be revised to "No."*



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### **Response**

The in-text table for Residential Area 3 in Section 8.1.5.3 of the HHRA has been revised as noted in the comment.

### **U.S. EPA HHRA Specific Comment #8**

*Section 8.1.5.3, Page 242, Paragraph 1. This paragraph summarizes receptor-specific total risks and hazards for Commercial Area 1. The table references for groundwater exposure by construction workers appear to be incorrect; the table references are to Tables I.5.23.CT and I.5.23.RME. The correct table references are Tables I.8.23.CT and I.8.23.RME. The in-text table should be revised accordingly.*

### **Response**

The incorrect table reference within the in-text table of Section 8.1.5.3, Commercial Area 1 for the construction worker exposure to groundwater has been corrected as noted in the comment.

### **U.S. EPA HHRA Specific Comment #9**

*Section 8.1.5.4, Page 248, Paragraph 1. Section 8.1.5.4 presents a summation of risks. The in-text table for Residential Area 2 was found to contain an error. For potential exposure for the resident (future) including surface soil, the total risk ( $8.7E-04$ ) is  $> 1E-04$ ; the notation in the column "Risk  $> 10^{-4}$ " should be revised to "Yes."*

### **Response**

The in-text table for Residential Area 2 in Section 8.1.5.4 of the HHRA has been revised as the reviewer noted.

### **U.S. EPA HHRA Specific Comment #10**

*Section 8.1.5.5, Page 258 through 262. Section 8.1.5.5 presents a summary of risk and hazard exceedances. Risks are identified as to whether they exceed  $10^{-6}$ . This is insufficient. First, as noted in the general comments, risks  $\geq 1E-06$  should be identified in the HHRA. Second, it is important to note if any risks are  $> 1E-04$  (the upper end of EPA's risk range). This information could easily be inserted into the in-text tables by using footnotes or an additional column.*



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### **Response**

The in-text tables presented in Section 8.1.5.5 of the HHRA were revised to identify risks  $\geq 10^{-4}$  and  $\geq 10^{-6}$ .

### **U.S. EPA HHRA Specific Comment #11**

*Section 8.1.5.6, Page 263, Paragraph 1. Section 8.1.5.6 presents risk and hazard contributions. The last sentence in the subject paragraph states "however, in the summary tables presented below only the chemicals with hazard quotients of 1 or greater are shown as contributing COPCs." This statement is incorrect. Numerous examples of hazards less than 1 are in the summary tables. For example, a chemical may be identified as a contributing COPC based on risk. For these chemicals, it is appropriate to show the associated hazard for completeness in the in-text tables. However, these COPCs should not be discussed in the text as contributors to hazard; inclusion of these COPCs in the text clutters the discussion and is not helpful. In other cases, chemicals with no risks or risks  $< 1E-06$  and hazards  $< 1$  are shown as contributing COPCs. For example, see the future resident - "Undisturbed" surface soil exposure scenario on page 264 - aluminum has no risk and a hazard of 0.88 for groundwater. Several other COPCs have hazards well above 1; aluminum is clearly a minor contributor to total groundwater hazards and should not be listed in the in-text table or discussed in the text. Section 8.1.5.6 should be closely reviewed and revised accordingly.*

### **Response**

Section 8.1.5.6 of the HHRA has been revised to focus only on the drivers of risk ( $\geq 10^{-6}$ ) and hazard ( $> 1$ ).

### **U.S. EPA HHRA Specific Comment #12**

*Section 8.1.5.6.2, Page 267, Paragraph 1. Section 8.1.5.6.2 presents risk and hazard contributors for Residential Area 2. For the future resident - "disturbed" soil exposure scenario, the hazard quotient (HQ) for soil for arsenic is shown as 1.1; this value is incorrect. The correct value, as shown in Table I.2.46.RME, is 0.4. The in-text table should be revised accordingly. Similarly, the cumulative RME risk across all media for this same receptor/scenario is shown as  $8.1E-04$ ; this value is incorrect. The correct value, as shown in Table I.2.41.RME, is  $8.7E-04$ . The in-text table should be revised accordingly.*



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### **Response**

The in-text table for Residential Area 2 in Section 8.1.5.6.2 of the HHRA has been revised as noted in the comment.

### **U.S. EPA HHRA Specific Comment #13**

*Section 8.1.5.6.7, Page 284, Paragraph 2. This paragraph summarizes risk and hazard drivers regarding the future commercial worker under the "disturbed" soil exposure scenario at Mixed Residential/Commercial Area 2. The total RME hazard quotient (HQ) of Contributing COPCs Across all Media is listed as 1.6. According to the table referenced (Table I.7.48.RME), the correct total HQ is 1.5. The in-text table should be corrected.*

### **Response**

The in-text table for Mixed Residential/Commercial Area 2 in Section 8.1.5.6.7 of the HHRA has been revised as noted in the comment.

### **U.S. EPA HHRA Specific Comment #14**

*Section 8.1.5.7.1, Page 290, Paragraph 1. Section 8.1.5.7.1 presents the results from the adult lead model. The in-text table presents a result of 2.4 micrograms per deciliter (µg/dL) for the future commercial worker under undisturbed conditions at Commercial Area 4. The result is referenced to Table I.11.41. However, the subject result is not included in Table I.11.41; this table includes only the last three results shown in the in-text table. The in-text table should be revised accordingly.*

### **Response**

The in-text table for the adult lead model results in Section 8.1.5.7.1 of the HHRA has been revised as noted in the comment.

### **U.S. EPA HHRA Specific Comment #15**

*Section 10.1.3, Pages 340 through 348. Section 10.1.3 presents a summary of the significant results of the HHRA for the RI Revision 1. Review of this section reveals that only risks results > 1E-06 and hazards > 1 are discussed. This approach should be clearly stated at the beginning of Section 10.1.3. Further, the discussion of risks should be revised from risks > 1E-06 to risks ≥ 1E-06. In addition, several of the bulleted items in this section are excessively long, containing over 10*



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*sentences. Wherever possible, bulleted items should be revised to include sub-bulleted items to break up longer discussions.*

*Also, in a limited number of cases (for example, see the discussion of the utility worker), the text explains states that cumulative risk was greater than 1E-06, but there were no individual COPCs with risks > 1E-06. This language would be useful in the discussion of other receptors. Section 10.1.3 should be closely reviewed and the text added where appropriate. In other cases (see the discussion of the construction worker), the cumulative hazard is > 1, but none of the COPCs had calculated hazards > 1. In these instances, segregated hazard results are used to determine if the cumulative hazard is truly > 1. The HHRA (Section 8.0), as well as the summary of the HHRA (Section 10.1.3), should be revised to discuss the segregated hazard results (see the RAGS D Table 9s).*

#### **Response**

Section 10.1.3 and the Executive Summary have been revised consistent with the comment.

#### **U.S. EPA HHRA Specific Comment #16**

*Section 10.1.3, Pages 340 through 349. Section 10.1.3 summarizes the human health risk assessment. The discussion is organized by receptor and uses lengthy narrative bullet items. Use of a lengthy narrative style makes it difficult for the reader to identify the key points in each item. This problem is compounded because the narrative items include no references to tables where the specifics can be verified. Section 10.1.3 should be revised to present the material in a more reader-friendly format, with key table references supplied to help readers verify stated information, and to inform them about where to look for additional information (particularly those readers focusing on the summary discussion and possibly less familiar with the detailed risk discussions of earlier sections).*

#### **Response**

Section 10.1.3 and the Executive Summary have been revised consistent with the comment.



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**U.S. EPA HHRA Specific Comment #17**

*Section 10.1.3, Page 346, Paragraph 4 and Page 347, Paragraph 1. These paragraphs present a summary of the risks and hazards for the construction worker. The discussion does not include results for Mixed Residential/Commercial Area 1. Total risks for this exposure area equal 1E-06. Consistent with General Comment 6, the HHRA (Section 8.0) and the summary of the HHRA (Section 10.1.3) should be revised to discuss all risks  $\geq 1E-06$ .*

**Response**

The HHRA has been revised to include and discuss risks  $\geq 10^{-6}$ .

**U.S. EPA HHRA Specific Comment #18**

*Section 10.1.3, Page 345, Paragraph 2. This paragraph summarizes risk and hazard information regarding the commercial worker at the Mixed Residential/Commercial Area 2. The text states that the major contributors to cumulative risks under the "disturbed" soil scenario include indeno(1,2,3-cd)pyrene. According to Table I.7.48.RME, the list of major contributors does not include indeno(1,2,3-cd)pyrene. Section 10.1.3 should be revised accordingly. (Note: this same comment applies to Section 10.2.1 [see Page 362]; that section should likewise be corrected).*

**Response**

Sections 10.1.3 and 10.2.1 were revised consistent with the comment.

**ENCLOSURE 3 - EPA COMMENTS ON THE REVISED SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT**

**U.S. EPA SLERA General Comment #1**

*The Executive Summary and Section 10.1.4 (a summary of the SLERA) should be revised as necessary to reflect any changes to Section 9.0 (and related appendices, tables, and figures) in response to general and specific comments.*

**Response**

The overall conclusions presented in the Executive Summary and Section 10.1.4 did not change as a result of addressing the U.S. EPA's general and specific comments on the SLERA. The appropriate revisions have been made to the tables for the SLERA provided as Appendix J.





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### **U.S. EPA SLERA General Comment #2**

*The SLERA assesses potential risk to ecological receptors within 11 areas of the site. The SLERA does not assess potential habitat within each of these areas and what ecological community now or in the future is likely to be present within each of those areas. At a number of these locations, if development as residential or commercial industrial properties occurs, land use likely would not support an ecological community, and an evaluation beyond the SLERA would be of little or no value for those locations. However, a better description of both current and future habitats assuming implementation of the current land use plan should be provided to support the ecological risk assessment and resulting risk management decisions.*

### **Response**

Descriptions of the existing habitats have been added to the discussion for each redevelopment area, as well as the Executive Summary and Section 10.1.4. The habitats expected to be preserved under the current redevelopment plan are also discussed. For the refinement process in Step 3a, only samples from those areas expected to provide habitat for ecological receptors will be considered. This results in elimination of some of the redevelopment areas from further evaluation (e.g., Waterfront Plaza and Mixed Residential/Commercial Area 1). In general, those areas adjacent to the Kalamazoo River will be evaluated in Step 3a.

### **U.S. EPA SLERA General Comment #3**

*The Technical Memorandum presents a proposed approach for selecting toxicity reference values (TRV) for use in the Step 3a evaluation. The memorandum provides values based on information provided in EPA's Ecological Soil Screening Levels (Eco-SSL) documents (EPA 2005, 2007, and 2008) and for those constituents not addressed in EPA's EcoSSL documents, values are provided from the literature. The proposed alternate values from the literature sources are acceptable. However, it is not acceptable to modify the EcoSSL NOAEL TRVs based on the documentation provided—this is not consistent with EPA's use of these values. If the objective is to provide the risk managers an understanding of the potential range of risks at the site, it is more appropriate to identify TRVs based on the lowest observed adverse effect level (LOAEL) for each constituent identified as a chemical of potential concern based on the SLERA results. When identifying those values, care should be taken to note those studies applicable to this site and relevant to the potential receptors. An approach to be used to identify those values should be provided to EPA for review and approval.*



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### **Response**

A conference call with representatives of U.S. EPA, Tetra Tech, and CRA was conducted on September 27, 2012 to discuss the Toxicity Reference Value (TRV) Technical Memorandum submitted to U.S. EPA on April 20, 2012. Based on the September 27, 2012 discussion, a revised TRV Technical Memorandum, which identifies low end and high end TRVs, has been submitted to U.S. EPA with the October 19, 2012 Revised (Revision 2) RI Report.

### **U.S. EPA SLERA Specific Comment #1**

*Section 9.0, Page 296, Paragraph 1. Section 9.0, the introduction to the SLERA, notes that Step3a – a refinement of chemicals identified as constituents of potential ecological concern – is provided in an addendum. This document is not listed in the table of contents and does not appear within the RI document. The text should be revised to correct this statement by indicating that Step3a will be provided in the future as an addendum.*

### **Response**

The text in the referenced section has been revised to state that the Step 3a refinement document will be submitted at a future date.

### **U.S. EPA SLERA Specific Comment #2**

*Section 9.1.4, Page 300, Paragraph 2. Section 9.1.4 discusses contaminant fate and transport, and impact of these on the SLERA. The text states that areas of groundwater discharges apparently are not present within the assessment area. This statement should reference the discussion on groundwater flows at the site and groundwater table elevations as these relate to ground surface.*

### **Response**

Section 9.1.4 has been revised to reference Section 2.4.3 (Regional and Site Hydrogeology), Table 2.36 and Figures 2.20 through 2.24, which provide data on groundwater elevations.

### **U.S. EPA SLERA Specific Comment #3**

*Section 9.1.5, Page 300, Paragraph 4. Section 9.1.5 presents the potentially complete exposure pathways for the SLERA. It notes that the inhalation exposure route is generally not considered significant. The text should also identify the dermal pathway as an exposure route generally not considered significant.*



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### **Response**

Section 9.1.5 was revised consistent with the comment.

### **U.S. EPA SLERA Specific Comment #4**

*Section 9.2.1, Page 306, Paragraph 0. Section 9.2.1 presents the exposure estimates for the various receptors considered in the SLERA. The last sentence in this discussion notes the ecological screening values (ESV) and should be modified to state that "Constituents that were not detected and do have an available ESV, and whose laboratory detection limit was below the ESV, were eliminated from further evaluation." (Italic text notes additions to the text).*

### **Response**

Section 9.2.1 was revised consistent with the comment.

### **U.S. EPA SLERA Specific Comment #5**

*Appendix J, Table J.4. Table J.4 lists the ESVs. It includes those for a number of specific polycyclic aromatic hydrocarbons (PAH), while the evaluation is only for the low molecular weight and high molecular weight PAHs. The reader would be better served with a list of ESVs of those PAHs within each category, rather than a listing of ESVs for PAHs not relevant to the SLERA.*

*In several instances, the constituent reported in the analytical data reports did not match the chemical name in the ESV source document, and the name from the source document was provided – but not in all cases. The source document name should be provided in the table for dibromomethane and idomethane.*

### **Response**

As pointed out in this comment, the evaluation of risk for polycyclic aromatic hydrocarbons (PAHs) considers low molecular weight (LMW) PAHs, and "other" PAHs. Table J.4 has been revised to identify the LMW and high molecular weight (HMW) PAHs and eliminate the ESVs for the individual LMW and HMW PAHs. Tables J.5, J.6, and J.7 were also reviewed and those chemical constituents that were not included were deleted from J.4.

The source documents for all ESVs were consulted and the chemical names identified in the source documents added to Table J.4 and all the other tables where the chemicals are presented.



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**U.S. EPA SLERA Specific Comment #6**

*Appendix J, Table J.5. The footnotes should provide definitions for the terms "Ess Nutr" and "SQ."*

**Response**

Footnotes for Essential Nutrients (Ess Nutr) and Screening Quotient (SQ) have been added to Table J.5.

**U.S. EPA SLERA Specific Comment #7**

*Appendix J, Table J.6. No footnotes are provided for the terms used in this table. Addition of these footnotes to the table is necessary.*

**Response**

Footnotes for Table J.6 did appear in the printed version because the print area inadvertently did not include the rows with the footnotes. The print area has been reset so the footnotes now appear in the printed version.

**U.S. EPA SLERA Specific Comment #8**

*Appendix J, Table J.4. A definition of the term "BCOC" should appear in the footnotes.*

**Response**

A footnote for Bioaccumulative Chemical of Concern (BCOC) has been added to the footnotes for Table J.4.

**U.S. EPA SLERA Specific Comment #9**

*Appendix J, Tables J.8 through J.19. A definition of the term "SQ" should appear in the footnotes.*

**Response**

A footnote for SQ has been added to Tables J.8 through J.19.



**CONESTOGA-ROVERS  
& ASSOCIATES**

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Should you have any questions with regard to this letter, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Gregory A. Carli, P. E.

GAC/JQ/ds/19/Pwl.

Encl.

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